

Amendments to the Claims

1. (Twice Amended) A method for depositing a uniform layer of a metal on the interior surface of a cavity having an aspect ratio greater than about 8:1 comprising
providing an electrically conductive substrate having a
cavity therein, said cavity having a ratio of depth to at least
one transverse dimension greater than 8:1;

immersing said substrate as an electrode in an electroplating bath containing ions of a metal to be deposited onto said surface, wherein said electroplating bath is devoid of [at least one additive selected from the group consisting of] levelers and brighteners;

immersing a counter electrode in said plating bath;

passing an electric current between said electrodes;

wherein,

said electric current is a modulated reversing electric current comprising a train of pulses that are cathodic with respect to said substrate and pulses that are anodic with respect to said substrate,

said cathodic pulses have a charge transfer ratio with respect to said anodic pulses greater than one,

said cathodic pulses have a duration in the range from about 100 μ s to about 19.8 milliseconds, and

said anodic pulses are shorter than said cathodic pulses and have a pulse duration in the range from about 2 μ s to about 10 milliseconds.

2. (Original) The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 200 μ s to about 14.2 milliseconds.

3. (Original) The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 334 μ s to about 12.4 milliseconds.

4. (Original) The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 417 μ s to about 12.4 milliseconds.
5. (Original) The method of Claim 1, wherein said anodic pulse has a duration in the range of from about 4 μ s to about 7.2 milliseconds.
6. (Original) The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 6.7 μ s to about 6.2 milliseconds.
7. (Original) The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 8.3 μ s to 6.2 milliseconds.
8. (Original) The method of Claim 1, wherein said pulse train has a frequency in a range from about 50 Hz to about 5000 Hz.
9. (Original) The method of Claim 1, wherein said pulse train has a frequency in a range from about 70 Hz to about 2500 Hz.
10. (Original) The method of Claim 1, wherein said pulse train has a frequency in a range from about 80 Hz to about 1500 Hz.
11. (Original) The method of Claim 1, wherein said pulse train has a frequency in a range from about 80 Hz to about 1200 Hz.
12. (Original) The method of Claim 1, wherein said cathodic pulses have a duty cycle greater than about 50 %.
13. (Original) The method of Claim 1, wherein said cathodic pulses have a duty cycle from about 60 % to about 99 %.

14. (Original) The method of Claim 1, wherein said cathodic pulses have a duty cycle from about 70 % to about 95 %.
15. (Original) The method of Claim 1, wherein said cathodic pulses have a duty cycle from about 80 % to about 95 %.
16. (Original) The method of Claim 1, wherein said anodic pulses have a duty cycle less than about 50%.
17. (Original) The method of Claim 1, wherein said anodic pulses have a duty cycle from about 30 % to about 1 %.
18. (Original) The method of Claim 1, wherein said anodic pulses have a duty cycle from about 30 % to about 5 %.
19. (Original) The method of Claim 1, wherein said anodic pulses have a duty cycle from about 15 % to about 5 %.
20. (Original) The method of Claim 1, wherein said cavity has an aspect ratio greater than about 10:1.
21. (Original) The method of Claim 1, wherein said cavity has an aspect ratio greater than about 15:1.
22. (Original) The method of Claim 1, wherein said cavity has an aspect ratio greater than about 20:1.

23. (Original) The method of Claim 1, wherein said cavity is a through hole having an aspect ratio greater than about 8:1.

24. (Original) The method of Claim 1, wherein said cavity is a through hole having an aspect ratio greater than about 10:1.

25. (Original) The method of Claim 1, wherein said cavity is a through hole having an aspect ratio greater than about 15:1.

26. (Original) The method of Claim 1, wherein said cavity is a through hole having an aspect ratio greater than about 20:1.

27-29. Hereby Cancelled.

30. (Amended) The method of Claim 1, wherein, said plating bath is an aqueous acidic copper sulfate bath incorporating about 40 to about 80 g/L of copper sulfate, a molar ratio of sulfuric acid to copper sulfate of about 5:1 to about 8:1, about 5 % by weight of polyethylene glycol and about 30 ppm to about 60 ppm of chloride ion.

31. (New) The method of claim 1 wherein the cavity is a through-hole having a diameter of 250 microns or greater.